

## A BRIEF SURVEY OF THE MOSQUITOES OF SOUTH SULAWESI, INDONESIA, WITH SPECIAL REFERENCE TO THE IDENTITY OF *ANOPHELES BARBIROSTRIS* (DIPTERA: CULICIDAE) FROM THE MARGOLEMBO AREA<sup>1</sup>

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**Abstract:** In May 1972, a brief survey of mosquitoes was carried out in the Margolembo area and several other localities in South Sulawesi, Indonesia. A total of 37 species of mosquitoes was collected which includes 10 species of *Anopheles*, 3 species of *Mansonia*, 7 species of *Aedes*, 15 species of *Culex* and 1 species each of *Malaya* and *Uranotaenia*. Six of 37 species collected have not been previously recorded from Sulawesi. Dissection of 31 anophelines and 16 culicines did not reveal any malarial or filarial infection. The morphological characters of the larvae of *Culex* (*Lophoceraomyia*) sp. and *Culex pseudovishnui* are briefly described. The identity of *Anopheles barbirostris* from South Sulawesi is discussed and a list of 132 taxa of mosquitoes hitherto recorded from Sulawesi and adjacent islands is presented.

The prevalence of malaria and filariasis in transmigration villages of Margolembo, Luwu Regency, South Sulawesi Province, Indonesia, has been investigated and the results published by Cross et al. (1972) and Partono et al. (1972, 1973). In the same area, a search for mosquito vectors conducted by Partono et al. (1972) revealed the presence of 5 species of *Culex*, 1 species of *Mansonia*, and 2 species of *Anopheles*; dissection of these mosquitoes revealed developing filarial larvae only in *An. barbirostris*.

The object of the present study was to obtain immature stages of *An. barbirostris* for verification of its identity and to study other mosquito fauna. The villages included in the survey were Kalaena (village I), Sindu Binagun (village II) and Margolembo (village III) (FIG. 1). The mean annual temperature in the area is 27°C. The rainy season is from October through April, and the relative

humidity is consistently above 80%. According to Cross et al. (1972), malaria prevalence in the 3 villages in March 1970 was 15.7%, 32.6% and 11.2%, respectively. Partono et al. (1972) reported Malayan filariasis in the same villages, with microfilarial rates of 33.0%, 0.6% and 32.5%, respectively. A filariasis control program, using diethylcarbamazine, was introduced in the 1st and 3rd villages in March 1971; however, control measures were not undertaken in the 2nd village prior to May 1972. According to Partono et al. (1973), malaria and filariasis prevalence rates in the 2nd village in May 1972 were 23.2% and 3.1%, respectively.

### MATERIALS AND METHODS

Night catches of mosquitoes were carried out from 1900 hr to 2230 hr for 3 successive nights in houses, stables and a field hut at Kalaena. Larval collections were made in all 3 villages and also from Wonorejo, Enrekang, Rantepao and Ujungpandang (Makassar) during transit to and from the study site. In Ujungpandang, the night catches of mosquitoes were carried out in a deer pen; sweep-netting of mosquitoes resting on grasses was also attempted. Certain mosquitoes collected from houses, stables and a field hut were dissected for malarial and filarial infection. Other mosquitoes were pinned or preserved dry for further examination. The immature stages collected were kept alive and reared to adults individually or in mass. All specimens were examined microscopically on return to the laboratory. When necessary, dried specimens were relaxed and pinned. Larval specimens were dehydrated through changes of alcohol and creosote-xylene mixture and finally mounted in balsam. Male genitalia were removed and treated with 5% KOH and processed in the same manner. The specimens used for this study are all deposited in the collection of the U.S. Naval Medical Research Unit No. 2, Taipei, Taiwan, Republic of China.

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FIG. 1. A map of Sulawesi, showing area and locations of mosquito collection.

#### RESULTS AND DISCUSSION

##### Mosquito fauna

Night catches from houses, stables and a field hut at Kalaena between 13–15 May 1972 yielded a total of 4638 female and 6 male mosquitoes consisting of 7 species of *Anopheles*, 3 species each of *Mansonia* and *Aedes*, 10 species of *Culex* and a species of *Uranotaenia* (location 1, 2, 3 of TABLE 1).

Among the anophelines collected, *An. nigerrimus* was predominant over the other species. A larger catch of *An. barbirostris* was recorded from a field hut situated near the forest fringe than from houses and stables situated about 2 km away from the forest fringe. Although the night catches were not planned to obtain relative degrees of anthropophilism and zoophilism, the percentages of catches for certain species collected from stables (buffalos as bait at location 2 of TABLE 1) against those from houses and a field hut (humans as bait at location 1 & 3 of TABLE 1) suggest that *Culex tritaeniorhynchus summorosus* ( $1328/1339 = 99.1\%$ ), *Culex whitmorei* ( $2354/2452 = 96\%$ ) and *Anopheles peditaeniatus* ( $81/94 = 86.1\%$ ) are highly zoophilic, *An. nigerrimus* ( $277/418 = 66.2\%$ ) and *An. tessellatus*

( $46/70 = 65.7\%$ ) less zoophilic, and *An. barbirostris* ( $4/80 = 5\%$ ) highly or at least moderately anthropophilic.

Night catches of mosquitoes in a hotel room at Palopo and in a deer pen in Ujungpandang, and daytime sweep-netting of mosquitoes resting on grasses at the vicinity of Ujungpandang yielded 72 female and 21 male mosquitoes consisting of 3 species of *Anopheles*, 1 species of *Mansonia*, 2 species of *Aedes*, and 7 species of *Culex* (location 13 of TABLE 1).

Larval collections in the Margolembu area and in the places en route to the area yielded 7 species of *Anopheles*, 1 species of *Malaya*, 2 species of *Aedes* and 12 species of *Culex* (location 4–10 of TABLE 1).

Review of the published literature reveals that 41 species or subspecies of *Anopheles*, 34 species of *Aedes*, 22 species of *Culex*, 9 species of *Mansonia*, 6 species of *Armigeres*, 4 species of *Tripteroides*, 3 species each of *Toxorhynchites* and *Mimomyia*, 2 species each of *Topomyia*, *Hodgesia* and 1 species each of *Malaya*, *Uranotaenia*, *Ficalbia*, *Orthopodomyia*, *Aedeomyia* and *Heizmannia* have been recorded from Sulawesi and adjacent islands (APPENDIX). Although only a very brief survey was carried out in the present investigation, the mosquitoes collected include 10 species of *Anopheles*, 15 species of *Culex*, 7 species of *Aedes*, 3 species of *Mansonia*, and 1 species each of *Malaya* and *Uranotaenia*. Among these mosquitoes, records of *Aedes alboscuteellatus*, *Aedes dux*, *Uranotaenia campestris*, *Culex fragilis*, *Culex scanloni* and *Culex (Lophoceraomyia)* sp. are new for Sulawesi. The mosquito fauna of Sulawesi consists mainly of Oriental species, with only 7 species, i.e., *Hodgesia spoliata*, *Mansonia memorans*, *Culex alis*, *Culex annulirostris*, *Anopheles farauti*, *Anopheles punctulatus* and *Toxorhynchites amboinensis*, considered Australasian. More extensive surveys in the future will undoubtedly reveal many more new mosquito records.

##### Taxonomic notes

The larva of *Culex (Lophoceraomyia)* sp. differs from that of *Cx. rubithoracis* in that hair 3-P is single instead of multiple-branched, from that of *Cx. reidi* in that hair 4-P is bifid instead of single, and that thoracic integument is spiculate instead of smooth, and from that of *Cx. variatus* in that hair 7-I is single instead of 2-branched, and that hair 4-X consists of 10 hairs instead of 12 hairs. Other morphological features are as follows: hair 4-C shorter than the distance between the bases of the pair, with 3 or more branches; hair 2-VIII bifid; hair 14-P single; siphon with 4 pairs of subventral hair tufts, each hair 3-branched, only a little longer

TABLE 1. Mosquitoes collected in South Sulawesi Province, Indonesia, 11-18 May 1972.\*

Mosquito Species	LOCATION AND TYPE OF COLLECTION												
	1**	2	3	4	5	6	7	8	9	10	11	12	13
	A***	A	A	L***	L	L	L	L	L	L	A	A	A
<i>Anopheles</i>													
<i>aconitus</i>	—	—	—	1	—	—	—	—	—	—	—	—	—
<i>barbirostris</i>	11	4	65	13	—	—	—	—	—	—	—	—	—
<i>karwari</i>	1	1	—	—	—	1	—	—	—	—	—	—	—
<i>minimus flavirostris</i>	—	—	1	—	—	—	—	—	—	—	—	—	—
<i>nigerrimus</i>	65	277	76	21	—	—	8	—	—	24	1	6	—
<i>peditaeniatus</i>	2	81	11	—	—	—	—	—	—	—	—	—	—
<i>pseudobarbirostris</i>	—	—	—	1	—	—	—	—	—	—	—	—	—
<i>subpictus</i>	—	—	—	—	—	—	—	—	—	—	4	—	—
<i>tessellatus</i>	4	46	20	49	—	—	—	—	—	1	—	—	—
<i>vagus</i>	2	2(1)	—	9	—	6	3	2	2	17	—	2	—
<i>Mansonia</i>													
<i>annulata</i>	—	—	2	—	—	—	—	—	—	—	—	—	—
<i>dives</i>	—	1	1	—	—	—	—	—	—	—	—	—	—
<i>uniformis</i>	6	24	17	—	—	—	—	—	—	—	2	2(9)	—
<i>Malaya</i>													
<i>genurostris</i>	—	—	—	21	23	—	—	—	—	—	—	—	—
<i>Uranotaenia</i>													
<i>campestris</i>	1	1(1)	—	—	—	—	—	—	—	—	—	—	—
<i>Aedes</i>													
<i>aegypti</i>	—	—	—	—	—	—	—	—	—	25	—	—	—
<i>albopictus</i>	—	—	—	5	—	—	8	—	—	—	—	—	—
<i>alboscuteclatus</i>	1	5(3)	—	—	—	—	—	—	—	—	—	—	—
<i>butleri</i>	—	—	—	—	—	—	—	—	—	—	—	—	1
<i>dux</i>	—	—	—	—	—	—	—	—	—	—	1	—	—
<i>lineatopennis</i>	2	23	5	—	—	—	—	—	—	—	—	—	—
<i>vexans vexans</i>	—	23	1	—	—	—	—	—	—	—	—	—	—
<i>Culex</i>													
<i>annulus</i>	1	35	—	10	—	—	—	34	7	21	2	1(1)	—
<i>bitaeniorhynchus</i>	1	1	1	1	—	—	—	—	—	—	—	—	—
<i>fragilis</i>	—	—	—	2	—	—	11	—	—	—	—	—	—
<i>fuscocephala</i>	—	5	1	25	—	—	—	—	39	—	—	(1)	—
<i>gelidus</i>	—	1	—	—	1	—	36	—	—	—	1	—	—
<i>halifaxii</i>	—	—	—	—	1	—	5	—	—	—	—	1	—
<i>nigropunctatus</i>	—	1	—	—	3	—	6	—	—	—	—	—	—
<i>pipiens fatigans</i>	6(1)	—	—	5	—	—	—	—	—	6	2	—	—
<i>pseudovishnui</i>	1	1	5	1	10	—	25	—	—	49	—	—	—
<i>scanloni</i>	—	—	—	—	—	—	12	—	—	—	—	—	—
<i>sinensis</i>	3	3	—	—	—	—	—	—	—	—	—	—	—
<i>sitiens</i>	—	—	—	—	—	—	—	—	—	—	4	—	3(2)
<i>tritaeniorhynchus</i>	10	1328	1	5	20	3	20	—	—	18	43	28(21)	1
<i>summorosus</i>	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>whitmorei</i>	27	2354	71	—	—	—	—	—	—	—	—	—	—
<i>(Lophoceraomyia) sp.</i>	—	—	—	1	—	—	—	—	—	—	—	—	—

\*The number of ♂♂ collected is shown in parentheses.

\*\*1=house, Kalaena, 13 & 14 May; 2=stable, Kalaena, 13 & 14 May; 3=field hut, Kalaena, 15 May; 4=Kalaena, 13 & 15 May; 5=Margolembo, 14 May; 6=Sindu Binangun, 14 May; 7=Wonorejo, 14 & 16 May; 8=Enrekang, 12 May; 9=Rantepao, 12 May; 10=Udjungpandang, 18 May; 11=deer pen, Udjungpandang, 11 May; 12=sweep-netting, Udjungpandang, 18 May; 13=house, Palopo, 12 May.

\*\*\*A, adult collection; L, larval collection.

than the siphon width at the point of hair socket.

The presence of *Culex pseudovishnui* is confirmed by examination of the chaetotaxy of 60 fourth-instar larval specimens, i.e., 23 from Wonorejo, 4 from Margolembo and 33 from Udjungpandang. Variation in larval chaetotaxy is as follows: hair 4-P: single (1), bifid (93), trifid (4), missing (22); comb teeth: 5(1), 6(33), 7(60), 8(21), 9(5); lateral hair tufts of siphon: 1(6), 2(113), 3(1); subventral hair

tufts of siphon: 5(15), 6(81), 7(24). Although the number of lateral hair tufts on each side of siphon varies from 1 to 3, none of the specimens has either 1 or 3 lateral hair tufts on both sides.

#### *The identity of Anopheles barbirostris in the Margolembo area*

Reid (1968) indicates that although *An. barbirostris* appears to be harmless in most places, it is con-

sidered an important vector of malaria and filariasis in Sulawesi (Celebes). There is some doubt, however, about the identification of *An. barbirostris* and Reid (1968) further states that there may be 2 forms in Celebes: ordinary *An. barbirostris* and a vector form that has not yet been adequately studied. The latter has been referred to as *An. barbirostris* subspecies *innominata*, and Bonne-Wepster & Swellengrebel (1953) reported it as *An. vanus* Walker, 1860, which is a harmless species closely related to *An. barbumbrosus*. Owing to the difficulty of identifying adult *An. barbirostris* with certainty, there was a need to collect immature stages from the Margolembo area for making definite identification.

According to Reid (1968: 128), where *An. barbirostris* occurs alone without competition from either *An. campestris* or *An. donaldi*, the adult females are more variable and a proportion may resemble *An. campestris* or *An. donaldi*. Reid (1968: 128) suggests that identification based on adults alone should not be regarded as reliable until confirmed by examination of the early stages, particularly the pupae (and for *An. donaldi*, the eggs). The materials obtained in the Margolembo area during the present study showed the following characteristics.

*Larva* (3 larval skins examined). Falls within the range of *An. barbirostris* as defined by Reid (1968), having the following characteristics: (1) no stigmal process; (2) branches of the outer clypeal hair stiff, crowded and numerous (above 60); (3) sum of the branches on both abdominal hairs 5-III plus sum of the branches on both hairs 13-IV totals 19-21; and (4) difference between the sum of the branches on both abdominal hairs 13-III and the sum of the branches on both hairs 5-VII is 7-10.

*Pupa* (4 pupal skins examined). Also falls within the range of *An. barbirostris* as defined by Reid (1968), having the following characteristics: (1) trumpet with secondary cleft and seam; (2) lateral spine VII brown, 5 to 6 × as long as thick; (3) sum of the branches on both abdominal hairs 2-VI is 10-12; and (4) sum of the branches on both abdominal hairs 2-III is 12-15.

*Adult female* (4 females examined). Wing darker, more than 1/2 the scales dark between the basal dark mark on 5 and the apical dark mark on 5.2 as in *An. campestris*; however, white ventral scales few in number, confined to the median tufts, and a few on the lateral sternal margins as in *An. barbirostris*.

From the characteristics found in the larval and pupal stages, the specimens from the Margolembo area should be regarded as *An. barbirostris*, not *An. campestris* or *An. donaldi*.

#### Vector species

Since control measures had been implemented in the area, no special effort was made to dissect mosquitoes for determination of malarial and/or filarial vectors. Nevertheless, certain of the mosquitoes collected from houses, stables and a field hut were examined, but no parasites were found. The number of mosquitoes dissected was 13 *An. barbirostris*, 17 *An. nigerrimus*, 1 *An. peditaeniatus*, 15 *Ma. uniformis*, and 1 *Cx. whitmorei*.

Partono et al. (1972) recovered filarial larvae in 13 (11.7%) of 112 *An. barbirostris* caught resting indoors in March 1970. Positive infection was also found in 63 (43.4%) of 145 *An. barbirostris* caught after feeding upon a microfilaria carrier. These findings indicate that *An. barbirostris* is an important vector of Malayan filariasis in the Margolembo area. Although in the previous study (Partono et al. 1972) *Ma. uniformis* and in the present study *Ma. uniformis*, *Ma. annulata* and *Ma. dives* were found, the numbers of the mosquitoes collected were small, suggesting that *Mansonia* mosquitoes are not important in the transmission of Malayan filariasis in the area. Some swamps were evident, but the absence of *Pistia* and *Eichornia* seemed to limit the breeding of *Mansonia* mosquitoes.

Reid (1968) suggested that *An. barbirostris* may be an important malaria vector in Sulawesi because of its anthropophilism. Therefore, this species is believed to be an important vector of malaria in Margolembo. Another anopheline, *An. nigerrimus*, may also be important as a vector of malaria because of its high population density and anthropophilism.

*Cx. tritaeniorhynchus summorosus*, the vector of Japanese encephalitis elsewhere in Asia, was present in large numbers; however, whether Japanese encephalitis occurs in the area is not known.

#### APPENDIX

Mosquitoes hitherto recorded from Sulawesi and adjacent islands are listed below. The source of record is indicated by author(s), date and page number. In cases where the mosquito name differs from what is now considered appropriate, the one originally used is shown preceding author(s).

#### *Anopheles* (*Anopheles*) *aikenii* James, 1903

Swellengrebel & Rodenwaldt, 1932: 113.—Stone et al., 1959: 13.—Reid, 1965: 109; 1968: 238.—as *An. aikeni*, Brug, 1931: 4.—Brug & Bonne-Wepster, 1947: 180.—Bonne-Wepster & Swellengrebel, 1953: 90.—Waktoedi, 1954: 11.—as *An. aikeni* form III, Waktoedi, 1954: 11.

#### *Anopheles* (*Anopheles*) *albotaeniatus* (Theobald, 1903)

Brug & Bonne-Wepster, 1947: 180.—Hell, 1952.—Waktoedi, 1954: 11.—Reid, 1968: 148.—Harrison & Scanlon, 1975: 31.

#### *Anopheles* (*Anopheles*) *baezai* Gater, 1933

Brug & Bonne-Wepster, 1947: 180.—Bonne-Wepster & Swel-

- lengrebel, 1953: 180.—Waktoedi, 1954: 11.—Reid, 1968: 169.
- Anopheles (Anopheles) bancrofti barbiventris** Brug, 1938  
As *An. bancrofti* var. *barbiventris*, Brug & Bonne-Wepster, 1947: 182.—Bonne-Wepster & Swellengrebel, 1953: 222.—Waktoedi, 1954: 10.—Stone et al., 1959: 15.—Stone & Delfinado, 1973: 268.—as *An. bancrofti* (? Celebes), Edwards, 1932: 40.
- Anopheles (Anopheles) barbirostris** Van der Wulp, 1884  
Brug, 1931: 4.—Venhuis, 1939: 2515.—Brug & Bonne-Wepster, 1947: 180.—Bonne-Wepster & Swellengrebel, 1953: 208.—Waktoedi, 1954: 10.—Reid, 1962: 15; 1968: 129.—Cross et al., 1972: 590.—Partono et al., 1972: 543.—Harrison & Scanlon, 1975: 86.—as *Myzorrhynchus barbirostris*, Brug & Haga, 1923: 635.—as *An. barbirostris typicus*, Swellengrebel & Rodenwaldt, 1932: 87.—as *An. barbirostris* subsp. inom., Brug & Bonne-Wepster, 1947: 180.
- Anopheles (Anopheles) bengalensis** Puri, 1930  
As *An. aiteni bengalensis*, Brug & Bonne-Wepster, 1947: 180.—as *An. aiteni* var. *bengalensis* (? Celebes), Bonne-Wepster & Swellengrebel, 1953: 94.—Waktoedi, 1954: 11.
- Anopheles (Anopheles) fragilis** (Theobald, 1903)  
Reid, 1965: 112; 1968: 236.—Stone, 1967: 199.—Stone & Delfinado, 1973: 269.—as *An. aitenii* form I & II, Waktoedi, 1954: 11.
- Anopheles (Anopheles) gigas** Giles, 1901  
Stone et al., 1959: 19.—Reid, 1968: 219.—Stone & Delfinado, 1973: 269.
- Anopheles (Anopheles) gigas formosus** Ludlow, 1909  
Brug & Bonne-Wepster, 1947: 180.—as *An. gigas* var. *formosana*, Waktoedi, 1954: 10.
- Anopheles (Anopheles) indiensis** Theobald, 1901  
Bonne-Wepster & Swellengrebel, 1953: 245.
- Anopheles (Anopheles) insulaeflorum** (Swellengrebel & Swellengrebel de Graaf, 1919)  
Bonne-Wepster & Swellengrebel, 1953: 98.—Waktoedi, 1954: 12.
- Anopheles (Anopheles) letifer** Sandosham, 1944  
(?), Waktoedi, 1954: 11.
- Anopheles (Anopheles) nigerrimus** Giles, 1900  
Bonne-Wepster & Swellengrebel, 1953: 241.—Reid, 1953: 29.—Waktoedi, 1954: 9.—Cross et al., 1972: 590.—as *An. venhuisi*, Bonne-Wepster & Swellengrebel, 1953: 244.—Waktoedi, 1954: 9.—as *An. hyrcanus* var. *nigerrimus*, Swellengrebel & Rodenwaldt, 1932: 75.—as *An. hyrcanus* var. *nigerrima*, Brug & Bonne-Wepster, 1947: 180.—as *An. hyrcanus* var. X, Brug & Bonne-Wepster, 1947: 180.
- Anopheles (Anopheles) palmatus** (Rodenwaldt, 1926)  
Waktoedi, 1954: 12.
- Anopheles (Anopheles) peditaeniatus** (Leicester, 1908)  
Bonne-Wepster & Swellengrebel, 1953: 248.—Reid, 1953: 35; 1968: 113.—Cross et al., 1972: 590.
- Anopheles (Anopheles) pseudobarbirostris** Ludlow, 1902  
Bonne-Wepster & Swellengrebel, 1953: 221.—Waktoedi, 1954: 10.—Stone et al., 1959: 26.—Stone & Delfinado, 1973: 271.—as *An. bancrofti pseudobarbirostris*, Brug & Bonne-Wepster, 1947: 182.—as *An. bancrofti* var. *pseudobarbirostris*, Swellengrebel & Rodenwaldt, 1932: 92.
- Anopheles (Anopheles) separatus** (Leicester, 1908)  
Waktoedi, 1954: 10.
- Anopheles (Anopheles) sinensis** Wiedemann, 1828  
Brug, 1931: 4.—Waktoedi, 1954: 9.—as *Myzorrhynchus sinensis*, Brug & Haga, 1923: 635.—as *An. hyrcanus sinensis*, Brug & Bonne-Wepster, 1947: 180.
- Anopheles (Anopheles) umbrosus** (Theobald, 1903)  
Swellengrebel & Rodenwaldt, 1932: 101.—Brug & Bonne-Wepster, 1947: 181.
- Anopheles (Anopheles) vanus** Walker, 1860  
Bonne-Wepster & Swellengrebel, 1953: 212.—Waktoedi, 1954: 10.—Stone et al., 1959: 29.—Reid, 1962: 35; 1968: 142.—Stone & Delfinado, 1973: 272.—Baisas, 1974: 56.—as *An. barbirostris* var. *barbumbrosus*, Swellengrebel & Rodenwaldt, 1932: 87.—as *An. barbumbrosus*, Brug & Bonne-Wepster, 1947: 180.—Waktoedi, 1954: 10.
- Anopheles (Cellia) aconitus** Dönitz, 1902  
Brug, 1931: 3.—Swellengrebel & Rodenwaldt, 1932: 163.—Brug, 1939: 181.—Bonne-Wepster & Swellengrebel, 1953: 368.—Waktoedi, 1954: 12.—Reid, 1968: 322.—Stone & Delfinado, 1973: 273.—(? Celebes, Buton, Muna), Bonne-Wepster & Brug, 1932: 368.
- Anopheles (Cellia) annularis** Van der Wulp, 1884  
As *An. fuliginosus*, Brug, 1931: 4.
- Anopheles (Cellia) farauti** Laveran, 1902  
Waktoedi, 1954: 14.—as *An. punctulatus* var. *moluccensis*, Swellengrebel & Rodenwaldt, 1932: 209.
- Anopheles (Cellia) indefinitus** (Ludlow, 1904)  
Stone & Delfinado, 1973: 274.—as *An. subpictus* var. *malayensis*, Waktoedi, 1954: 12.—Stone et al., 1959: 55.
- Anopheles (Cellia) karwari** (James, 1903)  
Swellengrebel & Rodenwaldt, 1932: 189.—Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 462.—Waktoedi, 1954: 13.—Reid, 1968: 365.
- Anopheles (Cellia) kochi** Dönitz, 1901  
Brug, 1931: 3.—Swellengrebel & Rodenwaldt, 1932: 223.—Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 270.—Waktoedi, 1954: 14.—Reid, 1968: 269.—as *Cellia kochi*, Brug & Haga, 1923: 636.—as *An. kochi* var. *torakala*, Stone & Delfinado, 1973: 275.
- Anopheles (Cellia) ludlowae** (Theobald, 1903)  
Reid, 1968: 328.—as *An. ludlowi*, Bonne-Wepster & Swellengrebel, 1953: 408.—(?), Brug & Bonne-Wepster, 1947: 181.—Waktoedi, 1954: 12.
- Anopheles (Cellia) ludlowae torakala** Stoker & Waktoedi, 1949  
As *An. ludlowi* & *An. ludlowi* var. *torakala*, Waktoedi, 1954: 12.—as *An. ludlowae* var. *torakala*, Stone et al., 1959: 47.
- Anopheles (Cellia) maculatus** Theobald, 1901  
Brug, 1931: 4.—Swellengrebel & Rodenwaldt, 1932: 185.—Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 457.—Waktoedi, 1954: 13.—Reid, 1968: 359.—as *Nyssorrhynchus maculatus*, Brug & Haga, 1923: 636.
- Anopheles (Cellia) minimus** Theobald, 1901  
Swellengrebel & Rodenwaldt, 1932: 163.—Brug & Bonne-Wepster, 1947: 181.—Reid, 1968: 319.—(?), Waktoedi, 1954: 12.
- Anopheles (Cellia) minimus flavirostris** (Ludlow, 1914)  
As *An. minimus* var. *flavirostris*, Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 375.—as *An. flavirostris*, Waktoedi, 1954: 13.
- Anopheles (Cellia) parangensis** (Ludlow, 1914)  
Swellengrebel & Rodenwaldt, 1932: 118.—Edwards, 1932: 56.—Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 414.—Waktoedi, 1954: 12.—Reid, 1968: 328.
- Anopheles (Cellia) punctulatus** Dönitz, 1901  
Waktoedi, 1954: 13.
- Anopheles (Cellia) subpictus** Grassi, 1899  
Swellengrebel & Rodenwaldt, 1932: 151.—Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 418.—Waktoedi, 1954: 12.—Reid, 1968: 333.—as *Myzomyia rossi*, Brug & Haga, 1923: 636.—as *An. rossi*, Brug, 1931: 2.
- Anopheles (Cellia) sulawesi** Waktoedi, 1954  
As *Neomyzomyia leucosphyrus*, Brug & Haga, 1923: 636.—as *An. leucosphyrus*, Swellengrebel & Rodenwaldt, 1932: 197.—Bonne-Wepster & Swellengrebel, 1953: 285.—Brug & Bonne-Wepster, 1947: 181.—Waktoedi, 1954: 13.—as *An. leucosphyrus* var. *hackeri*, Swellengrebel & Rodenwaldt, 1932: 197.—Reid, 1949: 46.—Waktoedi, 1954: 13.—as *An. leucosphyrus* nr *hackeri*, Bonne-Wepster & Swellengrebel, 1953: 297.—as *An. leucosphyrus hackeri*, Brug & Bonne-Wepster, 1947: 181.—as *An. leucosphyrus* var.

- sulawesi*, Waktoedi, 1954: 13.—Stone et al., 1959: 46.—as *An. leucosphyrus* Celebes form, Colless, 1956: 82.
- Anopheles (Cellia) sundaicus** (Rodenwaldt, 1925)  
Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 400.—Waktoedi, 1954: 12.—Reid, 1968: 347.—as *An. ludlowi* var. *sundaica*, Swellengrebel & Rodenwaldt, 1932: 138.
- Anopheles (Cellia) tessellatus** Theobald, 1901  
Reid, 1968: 262.—as *An. tessellatus*, Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 277.—Waktoedi, 1954: 14.—as *An. punctulatus tessellatus*, Swellengrebel & Rodenwaldt, 1932: 217.
- Anopheles (Cellia) tessellatus orientalis** Swellengrebel & Swellengrebel de Graaf, 1919 (1920)  
As *An. tessellatus* var. *orientalis*, Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 279.—Waktoedi, 1954: 14.—as *An. tessellatus* var. *orientalis*, Stone et al., 1959: 56.—Stone & Delfinado, 1973: 279.
- Anopheles (Cellia) tessellatus kalawara** Stoker & Waktoedi, 1949  
As *An. tessellatus* var. *kalawara*, Waktoedi, 1954: 14.—as *An. tessellatus* var. *kalawara*, Stone et al., 1959: 56.—Stone & Delfinado, 1973: 278.
- Anopheles (Cellia) vagus** Dönitz, 1902  
Brug, 1931: 3.—Swellengrebel & Rodenwaldt, 1932: 145.—Brug & Bonne-Wepster, 1947: 181.—Bonne-Wepster & Swellengrebel, 1953: 430.—Waktoedi, 1954: 12.—Stone et al., 1959: 15.—Partono et al., 1972: 543.—as *Myzomyia vaga*, Brug & Haga, 1923: 636.
- Anopheles (Cellia) vagus albino** Stoker & Waktoedi, 1949  
Waktoedi, 1954: 12.
- Anopheles (Cellia) varuna** Iyengar, 1924  
Waktoedi, 1954: 12.—as *An. minimus* var. *varuna* (? Celebes), Brug & Bonne-Wepster, 1947: 181.
- Toxorhynchites (Toxorhynchites) albitarsis** (Brug, 1939)  
♂ as *Megarhinus inornatus* var. *albitarsis*, Brug, 1939: 92.—Brug & Bonne-Wepster, 1947: 182.—as *Tx. inornatus* ssp. *albitarsis*, Stone et al., 1959: 63.—Stone & Delfinado, 1973: 281.—♀ as *Megarhinus aurifrons* (? Celebes), Brug, 1939: 93.—Brug & Bonne-Wepster, 1947: 182.—Stone et al., 1959: 62.—Stone & Delfinado, 1973: 280.
- Toxorhynchites (Toxorhynchites) amboinensis** (Dolechall, 1857)  
As *Megarhinus splendens* var. *subulifer*, Brug & Bonne-Wepster, 1947: 182.
- Toxorhynchites (Toxorhynchites) splendens** (Wiedemann, 1819)  
Bonne-Wepster, 1954: 11.—Stone & Delfinado, 1973: 281.—as *Tx. immisericors*, Theobald, 1910: 98.
- Tripteroides (Tripteroides) caeruleocephalus** (Leicester, 1908)  
Brug & Bonne-Wepster, 1947: 182.
- Tripteroides (Tripteroides) nitidoventer** (Giles, 1904)  
Stone et al., 1959: 69.—Stone & Delfinado, 1973: 287.—as *Tp. nitidoventer*, Brug, 1939: 95.—Brug & Bonne-Wepster, 1947: 183.
- Tripteroides (Tripteroides) powelli** (Ludlow, 1909)  
Brug, 1939: 93.
- Tripteroides (Tripteroides) powelli indicus** (Barraud, 1929)  
Stone et al., 1959: 69.—as *Tp. powelli* var. *indica*, Brug, 1939: 94.—Brug & Bonne-Wepster, 1947: 183.—as *Tp. indicus*, Stone & Delfinado, 1973: 287.
- Topomyia (Suaymyia) auriceps** Brug, 1939  
Brug, 1939: 96.—Brug & Bonne-Wepster, 1947: 183.—Stone et al., 1959: 95.—Stone & Delfinado, 1973: 283.
- Topomyia (Topomyia) dubitans** Leicester, 1908  
(? Boeton, ? Kabaena), Brug & Bonne-Wepster, 1947: 183.—(?), Brug, 1939: 98.—Macdonald, 1957: 11.
- Malaya genurostris** Leicester, 1908  
As *Harpagomyia genurostris*, Brug & Bonne-Wepster, 1947: 183.—Bonne-Wepster, 1954: 21.
- Hodgesia quasiansanguinae** Leicester, 1908  
Brug & Bonne-Wepster, 1947: 183.—Bonne-Wepster, 1954: 22.—Macdonald, 1957: 12.—Stone et al., 1959: 121.—Delfinado, 1966: 60.—Stone & Delfinado, 1973: 335.
- Hodgesia spoliata** Edwards, 1923  
Brug & Bonne-Wepster, 1947: 188.
- Uranotaenia (Uranotaenia) lateralis** Ludlow, 1905  
As *Ur. atra*, Brug & Bonne-Wepster, 1947: 183.—Bonne-Wepster, 1954: 25.
- Ficalbia minima** (Theobald, 1901)  
Brug & Bonne-Wepster, 1947: 183.—Mattingly, 1957: 29.—Macdonald, 1957: 15.
- Mimomyia (Mimomyia) chamberlaini** (Ludlow, 1904)  
As *Fi. chamberlaini*, Brug & Bonne-Wepster, 1947: 183.—Mattingly, 1957: 34.—Macdonald, 1957: 15.—Stone et al., 1959: 98.—Delfinado, 1966: 15.—Stone & Delfinado, 1973: 332.
- Mimomyia (Minomyia) hybrida** (Leicester, 1908)  
As *Fi. hybrida*, Brug & Bonne-Wepster, 1947: 183.—Bonne-Wepster, 1954: 32.—Mattingly, 1957: 41.—Macdonald, 1957: 15.—Delfinado, 1966: 16.
- Mimomyia (Etorleptomyia) luzonensis** (Ludlow, 1905)  
As *Fi. luzonensis*, Stone & Delfinado, 1973: 332.
- Mansonia (Coquillettia) crassipes** (Van der Wulp, 1881)  
Brug & Bonne-Wepster, 1947: 184.
- Mansonia (Coquillettia) memorans** (Bonne-Wepster, 1930)  
Brug & Bonne-Wepster, 1947: 188.
- Mansonia (Coquillettia) nigrosignata** Edwards, 1917  
As *Taeniorhynchus giblini*, Brug & Bonne-Wepster, 1947: 184.—Bonne-Wepster, 1954: 43.—as *Coquillettia nigrosignata*, Stone & Delfinado, 1973: 315.
- Mansonia (Mansonioides) annulata** Leicester, 1908  
Brug & Bonne-Wepster, 1947: 184.—Macdonald, 1957: 16.—Wharton, 1962: 15.—Stone, 1967: 204; 1970: 336.—Stone & Delfinado, 1973: 336.—as *Taeniorhynchus annulata*, Bonne-Wepster 1930: 204.—as *Taeniorhynchus annulatus*, Bonne-Wepster, 1954: 47.
- Mansonia (Mansonioides) annulifera** (Theobald, 1901)  
Brug & Bonne-Wepster, 1947: 184.—as *Taeniorhynchus annuliferus*, Bonne-Wepster, 1930: 201.
- Mansonia (Mansonioides) bonneae** Edwards, 1930  
Wharton, 1962: 17.
- Mansonia (Mansonioides) dives** (Schiner, 1868)  
As *Taeniorhynchus annulipes*, Bonne-Wepster, 1930: 209.—as *Ma. longipalpis*, Brug & Bonne-Wepster, 1947: 184.
- Mansonia (Mansonioides) indiana** Edwards, 1930  
Brug & Bonne-Wepster, 1947: 184.
- Mansonia (Mansonioides) uniformis** (Theobald, 1901)  
Brug & Bonne-Wepster, 1947: 184.—Partono et al., 1959: 543.—as *Taeniorhynchus uniformis*, Brug & Haga, 1923: 639.—Bonne-Wepster, 1930: 206.
- Orthopodomyia andamanensis** Barraud, 1934  
Knight & Mattingly, 1950: 16.—Bonne-Wepster, 1954: 30.—Zavortink, 1971: 15.—Stone & Delfinado, 1973: 336.
- Aedeomyia catasticta** Knab, 1909  
Brug & Bonne-Wepster, 1947: 184.—Tyson, 1970b: 11.
- Heizmannia (Mattinglyia) achaetae** (Leicester, 1908)  
Mattingly, 1970: 45.—Stone & Delfinado, 1973: 335.
- Aedes (Mucidus) aurantius aurantius** (Theobald, 1907)  
Tyson, 1970b: 48.—as *Ae. aurantius*, Brug & Bonne-Wepster, 1947: 184.—Bonne-Wepster, 1954: 60.—Macdonald, 1957: 17.—Mattingly, 1961: 36.
- Aedes (Mucidus) laniger** (Wiedemann, 1821)  
Brug & Bonne-Wepster, 1947: 184.—Bonne-Wepster, 1954: 59.—Macdonald, 1957: 17.—(? Celebes), Mattingly, 1961: 30.
- Aedes (Ochlerotatus) vigilax** (Skuse, 1889)  
Brug & Haga, 1923: 639.—Brug & Bonne-Wepster, 1947: 189.—Bonne-Wepster, 1954: 62.—Mattingly, 1961: 44.—Stone

& Delfinado, 1973: 306.

**Aedes (Finlaya) aureostriatus** (Doleschall, 1857)

Brug & Bonne-Wepster, 1947: 184.—Bonne-Wepster, 1954: 67.—Stone & Delfinado, 1973: 301.

**Aedes (Finlaya) avistylus** Brug, 1939

Macdonald, 1957: 18.—Stone et al., 1959: 160.—Stone & Delfinado, 1973: 294.—as *Ae. flavipennis* var. *avistyla*, Brug, 1939: 107.—Brug & Bonne-Wepster, 1947: 184.—as *Ae. avistyla*, Knight & Laffoon, 1946: 218.

**Aedes (Finlaya) niveus** (Ludlow, 1903)

Brug & Bonne-Wepster, 1947: 184.—Bonne-Wepster, 1954: 74.—as *Ae. niveus niveus*, Colless, 1958: 469.

**Aedes (Finlaya) poecilus** (Theobald, 1903)

As *Ae. poecilus*, Brug & Bonne-Wepster, 1947: 184.—Bonne-Wepster, 1954: 65.—as *Ae. poicilia*, Knight & Laffoon, 1946: 19.

**Aedes (Finlaya) prominens** (Barraud, 1923)

Brug & Bonne-Wepster, 1947: 184.—Macdonald, 1957: 224.—Stone et al., 1959: 169.—Stone & Delfinado, 1973: 298.

**Aedes (Finlaya) stenosoni** (Barraud, 1923)

Brug & Bonne-Wepster, 1947: 184.

**Aedes (Lorrainea) amesii** (Ludlow, 1903)

Macdonald, 1957: 22.—Stone & Delfinado, 1973: 301.—(? Celebes), Mattingly, 1959: 29.

**Aedes (Lorrainea) celebicus** Mattingly, 1959

Mattingly, 1959: 33.—Stone & Delfinado, 1973: 301.—as *Ae. furvus*, Brug & Bonne-Wepster, 1947: 184.

**Aedes (Lorrainea) fumidus** Edwards, 1928

Brug, 1939: 110.—Brug & Bonne-Wepster, 1947: 184.—Macdonald, 1957: 22.—Mattingly, 1959: 32.—Stone et al., 1959: 176.—Stone & Delfinado, 1973: 301.

**Aedes (Geokusea) kabaenensis** Brug, 1939

Brug, 1939: 108.—Brug & Bonne-Wepster, 1947: 185.—Mattingly, 1959: 50.—Stone et al., 1959: 177.—Stone & Delfinado, 1973: 300.

**Aedes (Rhinoskusea) longirostris** (Leicester, 1908)

Brug & Bonne-Wepster, 1947: 185.—Macdonald, 1957: 22.—Mattingly, 1958: 40.

**Aedes (Stegomyia) aegypti** (Linnaeus, 1762)

Brug & Bonne-Wepster, 1947: 189.—as *Stegomyia fasciata*, Theobald, 1907: 177.—as *Ae. argenteus*, Brug & Haga, 1923: 636.—as *Ae. fasciata*, Bonne-Wepster & Brug, 1932: 38.

**Aedes (Stegomyia) albolineatus** (Theobald, 1904)

Bonne-Wepster & Brug, 1932: 63.—Knight & Rozeboom, 1946: 84.—Brug & Bonne-Wepster, 1947: 185.—Bonne-Wepster, 1954: 84.

**Aedes (Stegomyia) albopictus** (Skuse, 1895)

Bonne-Wepster & Brug, 1932: 46.—Brug & Bonne-Wepster, 1947: 185.—Huang, 1972: 13.—as *Stegomyia scutellaris*, Theobald, 1910: 155.

**Aedes (Stegomyia) annandalei** (Theobald, 1910)

Brug & Bonne-Wepster, 1947: 185.

**Aedes (Stegomyia) desmotes** (Giles, 1904)

Brug & Bonne-Wepster, 1947: 185.—Macdonald, 1957: 20.

**Aedes (Stegomyia) gardnerii** (Ludlow, 1905)

Brug, 1939: 104.—Brug & Bonne-Wepster, 1947: 185.—as *Ae. gardneri*, Bonne-Wepster, 1954: 86.

**Aedes (Stegomyia) impatibilis** (Walker, 1860)

Stone et al., 1959: 184.—Stone & Delfinado, 1973: 309.

**Aedes (Stegomyia) paullusi** Stone & Farner, 1945

Brug & Bonne-Wepster, 1947: 188.—Bonne-Wepster, 1954: 84.—Marks, 1954: 376.—Huang, 1972: 49.—(? Celebes), Stone et al., 1959: 186.—Stone & Delfinado, 1973: 310.

**Aedes (Stegomyia) pseudalbolineatus** Brug, 1939

Brug, 1939: 103.—Knight & Rozeboom, 1946: 88.—Brug & Bonne-Wepster, 1947: 185.—Bonne-Wepster, 1954: 84.—Stone et al., 1959: 186.—Stone & Delfinado, 1973: 310.

**Aedes (Stegomyia) scutellaris** (Walker, 1859)

Brug & Bonne-Wepster, 1947: 188.—Bonne-Wepster, 1954:

81.—as *Ae. variegatus*, Brug, 1931: 21.—Bonne-Wepster & Brug, 1932: 56.—as *Ae. scutellaris* subgroup, Marks, 1954: 376.

**Aedes (Aedimorphus) lowisii** (Theobald, 1910)

Reinert, 1973: 37.—as *Ae. lowisi*, Brug & Bonne-Wepster, 1947: 185.

**Aedes (Aedimorphus) vexans vexans** (Meigen, 1830)

Reinert, 1973: 71.—as *Ae. vexans*, Brug & Haga, 1923: 639.—Brug & Bonne-Wepster, 1947: 189.

**Aedes (Neomelaniconion) lineatopennis** (Ludlow, 1905)

Brug & Bonne-Wepster, 1947: 185.—Mattingly, 1961: 53.—Baisas, 1974: 25.

**Aedes (Verrallina) butleri** Theobald, 1901

Brug & Haga, 1923: 639.—Huang, 1968: 17.—Reinert, 1974: 27.

**Aedes (Verrallina) neomacrodixoa** King & Hoogstraal, 1947

Delfinado, 1968: 27.—Huang, 1968: 38.—Stone, 1970: 153.—Stone & Delfinado, 1973: 304.—Reinert, 1974: 68.

**Aedes (Verrallina) panayensis** Ludlow, 1914

Brug & Bonne-Wepster, 1947: 185.—Huang, 1968: 47.—Stone & Delfinado, 1973: 304.—Reinert, 1974: 71.

**Aedes (Cancraedes) cancriscomes** Edwards, 1922

Brug & Bonne-Wepster, 1947: 185.—Bonne-Wepster, 1954: 96.

**Aedes (Cancraedes) curtipes** Edwards, 1915

Mattingly, 1958: 51.—as *Ae. tonsus*, Brug, 1934: 514.—(? Brug & Bonne-Wepster, 1947: 189.—(? Celebes), Stone et al., 1959: 177.

**Aedes (Cancraedes) mamodjoensis** Mattingly, 1958

Mattingly, 1958: 58.—Stone et al., 1959: 210.—Stone & Delfinado, 1973: 291.—as *Ae. tonsus* (Celebes), Brug & Bonne-Wepster, 1947: 189.

**Aedes (Cancraedes) thurmanae** Mattingly, 1958

Mattingly, 1958: 55.—Stone et al., 1959: 210.—Stone & Delfinado, 1973: 292.—as *Ae. tonsus* (Kabaena), Brug & Bonne-Wepster, 1947: 189.

**Armigeres (Armigeres) candelabrifer** Brug, 1939

Brug, 1939: 99.—Brug & Bonne-Wepster, 1947: 185.—Stone et al., 1959: 212.—Stone & Delfinado, 1973: 311.

**Armigeres (Armigeres) malayi** (Theobald, 1901)

Brug, 1931: 31.—Brug & Bonne-Wepster, 1947: 186.

**Armigeres (Armigeres) moultoni** Edwards, 1914

Brug & Bonne-Wepster, 1947: 186.—Macdonald, 1957: 26.

**Armigeres (Armigeres) obturbans** (Walker, 1860), nomina dubia

Brug, 1931: 32.—Brug & Bonne-Wepster, 1947: 186.—Stone et al., 1959: 215.—as *Culex obturbans*, Stone & Delfinado, 1973: 342.—as *Desvoidya obturbans*, Theobald, 1910: 141.

**Armigeres (Leicesteria) annulipalpis** (Theobald, 1910)

Brug, 1939: 102.—Brug & Bonne-Wepster, 1947: 186.—Bonne-Wepster, 1954: 105.—Macdonald, 1960: 134.

**Armigeres (Leicesteria) longipalpis** (Leicester, 1904)

Brug & Bonne-Wepster, 1947: 186.—Macdonald, 1957: 27; 1960: 127.

**Culex (Lutzia) fuscus** Wiedemann, 1820

Brug & Bonne-Wepster, 1947: 186.—as *Lutzia fuscana*, Brug & Haga, 1923: 639.

**Culex (Lutzia) halifaxii** Theobald, 1903

Partono et al., 1972: 543.—as *Cx. halifaxi*, Brug & Bonne-Wepster, 1947: 186.

**Culex (Eumelanomyia) malayi** (Leicester, 1908)

Brug, 1931: 38.—Brug & Bonne-Wepster, 1947: 186.—Bonne-Wepster, 1954: 111.—Sirivanakarn, 1972: 37.

**Culex (Eumelanomyia) brevipalpis** (Giles, 1902)

Brug & Bonne-Wepster, 1947: 186.

**Culex (Lophoceraomyia) minor** (Leicester, 1908)

Brug & Bonne-Wepster, 1947: 186.—Macdonald, 1957: 29.

**Culex (Lophoceraomyia) minutissimus** (Theobald, 1907)

- Barraud, 1934: 365.—Brug & Bonne-Wepster, 1947: 186.
- Culex (Lophoceraomyia) quadripalpis** (Edwards, 1914)  
Barraud, 1934: 365.—Brug & Bonne-Wepster, 1947: 186.—  
Macdonald, 1957: 29.
- Culex (Culiciomyia) nigropunctatus** Edwards, 1926  
Barraud, 1934: 385.—Brug & Bonne-Wepster, 1947: 187.—  
Macdonald, 1957: 30.
- Culex (Culiciomyia) pallidothorax** Theobald, 1905  
Barraud, 1934: 382.
- Culex (Culiciomyia) spathifurca** (Edwards, 1915)  
Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) alis** Theobald, 1903  
Brug & Bonne-Wepster, 1947: 189.
- Culex (Culex) annulirostris** Skuse, 1889  
Brug & Bonne-Wepster, 1947: 189.
- Culex (Culex) bitaeniorhynchus** Giles, 1901  
Brug & Haga, 1923: 639.—Brug, 1931: 35.—Brug & Bonne-  
Wepster, 1947: 187.—Partono et al., 1972: 543.
- Culex (Culex) fuscocephala** Theobald, 1907  
Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) gelidus** Theobald, 1901  
Brug & Bonne-Wepster, 1947: 187.—Partono et al., 1972:  
543.
- Culex (Culex) mimulus** Edwards, 1915  
Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) pipiens fatigans** Wiedemann, 1828  
Partono et al., 1972: 543.—as *Cx. fatigans*, Brug & Haga, 1923:  
640.—Brug, 1939: 189.—Brug & Bonne-Wepster, 1947: 189.
- Culex (Culex) pseudovishnui** Colless, 1957  
Partono et al., 1972: 543.—as *Cx. vishnui*, Brug, 1931: 35.—  
Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) sinensis** Theobald, 1903  
Brug & Haga, 1923: 639.—Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) sitiens** Wiedemann, 1828  
Brug & Haga, 1923: 640.—Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) tritaeniorhynchus summorosus** Dyar, 1920  
As *Cx. tritaeniorhynchus*, Brug, 1931: 35.—Barraud, 1934: 406.—  
Macdonald, 1957: 31.—as *Cx. tritaeniorhynchus* var. *siamensis*,  
Brug, 1934: 515.—Brug & Bonne-Wepster, 1947: 187.
- Culex (Culex) whitmorei** (Giles, 1904)  
Bonne-Wepster, 1954: 122.—Brug & Bonne-Wepster, 1947:  
187.
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